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ABSTRACT

The architecture profession needs to employ systems building design in order to raise the rate of productivity and performance in construction. Changes have been made in architecture educational programs that recognize the shift in the role of the architect from design genius to building production manager. Systems design has led to changes within the architectural organization, including a more highly structured organization composed of a team capable of management decisions and an organization capable of offering a complete package of services to the client. Also presented are data indicating that the U.S. Government has made a major shift toward systems building and that other big builders are following suit. (Author/DN)

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HOW SYSTEMS CONTRIBUTE TO MANAGEMENT PLANNING

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Systems and the Changing Architectural Practice

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Systems and the Changing Architectural Practice

Most architects look at systems building from the sidelines. They take a somewhat jaundiced view of all this talk about systems for they have seen fashionable ideas come and go before with little accomplished but talk and public relations. They remember the big push a few years ago towards modular dimensioning, heralded as a dramatic step forward in the interface between building materials, and they remember that the whole movement ended lamely with a proposal to accept a 4" increment of dimension as the basic module of size, not a particularly dramatic or meaningful outcome for so much talk and fol-de-rol. They remember the much heralded computer drafting machines that would make draftsmen obsolete in only a few years. Yet, on further investigation, architects found that the machines required as much manual labor as most traditional drafting and were expensive, complicated to use - in short, not the panacea they were programmed to be.

Today, there is talk of systems design, and for many this is just another Madison Avenue term which the average architect follows as a spectator, wondering why it has so much magic for the big offices, at the same time seeing little or no application to his practice in the small office. An architect from such a

small office, after seeing an hour long presentation on systems building turned to me and said, "Well, there's one thing I've learned from this long presentation on systems design - as far as I'm concerned there is far less there than meets the eye."

In this environment of mild skepticism, let me suggest that, with systems, this time there is a difference. This time the architect must become involved for the ground underneath him is changing and he can either jump or be shoved. Let me be more specific. No architect will dispute that the building owner is his client, no architect will dispute that the owner is therefore in the driver's seat when it comes to what can and will be built and for how much. Gentlemen, the reason architects must take notice of systems is simply because our clients, the owners, have taken notice of systems. They really didn't care very much about the 4" dimension or drafting machines, but they have very important reasons for caring about systems. And this interest on the part of owners is not something that <u>will</u> happen - it is something that <u>has</u> happened.

Systems building has not been heralded sufficiently. Perhaps most architects are unaware of the major shift government has made to systems buildings and the impact this shift in buying power will have on industry. And the shift was calculated, gentlemen, and the impact on industry is part of the game plan.

For example, a simple yellow booklet with the name, Federal Construction Council Technical Report No. 62, put out by the National Academy of Sciences National Research Council, is a bombshell of information. Did you know that between 1966 and 1970 the Air Force, Army, GSA, Navy, Veterans Administration, Postal Service and similar agencies built over 465 buildings with an area of 24.2 million square feet, at an aggregate cost of $734,000,000, and all of this construction was suitable for systems building? It is estimated that between 1971 and 1975 the government will aggregate over a billion dollars in buildings and this time they will require precoordinated subsystems in a large part of this building program.

This report was prepared for the federal agencies by the Federal Construction Council in 1970-1971, advocating the rapid implementation of systems components into government buildings at all levels.

To paraphrase the report, the need for systems stems from dissatisfaction with the rate of productivity and the performance of conventional construction. The cost of conventional construction has risen at an untenable rate. For example, the Engineering News Record's Building Cost Index in June 1971 was more than 40% higher than in June 1967, for an average annual increase of more than 10% in the four-year period. This is considerably in excess of the increase in the cost of living for the same period.

What has happened and is happening, gentlemen, is that the larger building owners, beginning with the federal government, have sought out systems design as an alternative course, and the report of the National Research Council bears out these facts.

The report concludes that there must be new initiatives to gain adequate productivity and performance in building, that building with subsystems is the most promising alternative to conventional construction, and that widespread implementation of systems is imminently desirable for the government to pursue. But the report is realistic in acknowledging that there will be many constraints to the acceptance of subsystems, not the least of which is a change in the role of the architect who, with subsystems, has less to do in detail drawing and more to do in management coordination. The government looks to the open-market owner/user as the key to breaking the systems log-jamb. The report looks to the formation of a national owner/user group to help aggregate markets, to lay the law down to architects that systems must be used, to be a pressure group in overcoming code and union resistance - in short, the government, recognizing that they alone cannot turn around an industry, have looked to the general marketplace owner/user to join with them in demanding systems.

This report was published last month; this is the state of the art, this is the current status report on the field position of systems. I suggest that architects can stand on the sidelines

if they will but the indications are a powerful new force is in the field and the quarterback this time is the owner, the architect's client. From this point on, I'd like to say that bringing systems into the small office practice is a simple matter, something like accepting a new material or a new type of specification. But, my personal experience has been quite the contrary and, in interpolating from what has happened to our firm, I am convinced that systems will generate a dramatic irreversible shift in the function of architects and obviously in the organization of the architect's office.

Let me be personal for a moment, only to make a point. I graduated from Yale 16 years ago when architects were trained to be individual geniuses, form givers in the tradition of Mies van der Rohe, Frank Lloyd Wright and Le Corbusier, three architects whom I admire tremendously. What does this mean in practical terms? Well, I had accumulated three degrees - Bachelor of Arts, Bachelor of Architecture and Masters Degree - yet at no time was it required that I take a business course. I had had hundreds of hours of design but no courses in business, economics or even interpersonal psychology. Yale, at that time, and all other "leaders" in architectural training, were so certain that architects would continue to change the world through design alone that they failed to give even a token course in business and, it must be admitted, I took my electives in life drawing rather than business administration, so I was no better than the school.

But architects are living in a new world today and the form giver of the 19th century is ineffective in the desperate crisis of too rapid urbanization. Le Corbusier could with design intuition "invent" bold solutions in the early years of this century and his ideas would capture the imagination of architects and sweep the world of design, as the International Style had swept the world earlier, based on the concepts of Mies van der Rohe and other moderns. But such intuitive genius is misplaced in the light of rising building costs, ineffective building techniques, and poor quality. To admire individual buildings seems extraneous when the problem is not with the individual building but with the city as a whole, with the needs of thousands of people, not the visually elite few.

In ten years I've seen my practice change radically, simply because I rejected the architect-genious concept (realizing I was not one) and espoused the new role of the architect as the building production manager.

The major thing to say about my firm is simply that it is not mine, but ours. Systems design leads naturally to a partnership practice, and, in our case, to incorporation so that other principals can be added in a business-like manner. The individual design philosophy is still important in the firm, but a team capable of management decisions is essential and this leads to a structured organization.

We have a full-time interiors person. Recognizing the need for total design services we made a decision a year or so ago to negotiate all our contracts when acceptable to the owner and, in so doing, have established close relationships with a residential and commercial contractor. Currently we are negotiating to become a franchised builder for a pre-engineered building line with a contractor, which would make us principals in a contracting firm. We are actively involved in research and consulting to manufacturers. We try to tie planning, architecture, interiors and repetitive building design into one package and to be capable of providing a turnkey service.

As I talk I'm sure you think I am describing a large office - I'm not. We have grown in the last year, but this is still a 15-man office, not a 200-man office. It is the 15-man office such as ours that must affirm systems design if it is to have wide usefulness. A few giant firms dealing with major government contracts will not bring systems to the grass roots. We use a systems approach to all our buildings today and every architectural firm should do the same, I feel. What does this mean in practice? Well, it means first of all that we are actively aware of the subsystems products that are on the market and understand why they were designed the way they were, to fill what slot in the building process. We have gone to a five-foot grid on all buildings to be compatible with on-the-shelf subsystem ceilings and structures. But we have no false illusions about systems - we won't use a system component unless it is competitive in price. So, in a

couple of jobs, we have used subsystem celings without structure; in other cases, preengineered structures with standard ceilings and partitions. The point is, we affirm systems. We feel the new role of architect as building producer or coordinator is a more meaningful one than the unique form giver of before. And yet we require systems to perform in the market place and avidly hold to a private, non-systems approach to building so we can always compare.

A number of architects have joined together in forming a national AIA Systems Committee, formed just this year and already one of the largest committees in the AIA, with 42 members or some such for 1973. On the committee are the recognized pioneers in systems that have been aware of this shift in practice for years. But, as significant are the many firms like ours that are affirming systems design because it makes sense to our owner/clients. Our role as a new AIA committee is to get the word to our membership that systems are here. They are a new challenge, and they should be affirmed and, more important, guided in their development. To this end, the AIA Systems Committee with the Architects in Government Committee will hold a Systems Conference 12, 13 April, 1973. The architect needs to direct research and development efforts as never before, for the architect must be a team member with the manufacturer as well as the contractor. There is a new impetus for architects being involved in the beginning of the systems design and then affirming the use of these larger components once designed.

But a final note of caution; an office must work hard at retraining itself if it is to be systems oriented. There are some hassels that must be resolved internally if a subsystems approach to buildings is to be used widely. It is a retraining job for many of us: picking up the business course we didn't get in college, talking to mortgage bankers about their cost packages when we used to leave it to the client to perform such tasks, looking at performance specifications to see what they really mean, contacting manufacturers before they produce a product to input both need and aggregated market. We have to change not only the image others have of us, but the image we have of ourselves.

I've brought only one slide to show, not a raft of pretty buildings photographed in deep shadow like the shots of pretty girls in Playboy, but a chart I'm proud of. This chart is a direct fall-out of our involvement in systems. Let me set the stage. We had a church to design - a pretty non-system program to be sure - and the budget didn't meet their requirements. Rather than designing a building and hoping they would come up with more money, or designing a smaller building and hoping they would live with it, we took a systems approach which is essentially an analytical approach. We plotted their needs against daily use. We proved conclusively their program was overblown and we proved it from a chart, not a perspective. Gentlemen, this is performing the service a client needs in this age. We as architects will still be designing buildings, still be making aesthetic statements, but the project

will start with charts, analysis such as this, so the equation for building is understood before we begin and design is for the thousands, not for the few. Thank you.